

Attorney Docket No.: 02CON360P

**In the Claims:**

**Claims 1-35 (canceled).**

**Claim 36 (previously presented):** A computer implemented method for simulating a system design containing at least two components, said method comprising:

identifying said components:

creating models of said components in a high level general purpose programming

language;

creating a set of function calls in said high level general purpose programming language;

combining said models to form a virtual prototype;

linking one of said models with another of said models using said set of function calls;

executing said virtual prototype, wherein said models communicate through a

transaction based interconnect using said set of function calls and cycle accurate

information is generated;

wherein said generating cycle accurate information step further comprises:

dividing activities in said simulation environment into a first plurality of activities

comprising an execute phase and a second plurality of activities comprising an update

phase;

computing said first plurality of activities comprising said execute phase at a clock

edge;

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updating at said clock edge a state of said simulation environment; and  
computing said second plurality of activities comprising said update phase  
at said clock edge.

**Claim 37 (previously presented):** A computer implemented method for simulating a  
digital system design in a cycle based simulation environment, comprising:

creating a system design model in a high level general purpose programming language  
comprising at least two components;

creating a transaction based interconnect in a high level general purpose programming  
language that is available to said at least two components;

executing said system design model, wherein said at least two components communicate  
through said transaction based interconnect using a set of function calls; and

maintaining cycle accurate information during the simulation;

wherein said maintaining cycle accurate information step further comprises:

dividing simulation activities in said simulation environment into a first plurality of  
activities comprising an execute phase and a second plurality of activities comprising an  
update phase;

computing said first plurality of activities comprising said execute phase at a clock  
edge;

updating at said clock edge a state of said simulation environment; and

computing said second plurality of activities comprising said update phase  
at said clock edge.

**Claim 38 (previously presented):** A computer program product embodied on a computer-readable medium, which when executed, causes a processing system to simulate a system design containing at least two components, said computer program product comprising:

instructions for integrating a model representing each of said at least two components, wherein said models comprise a virtual prototype and communicate through a transaction based interconnect using a set of function calls; and

instructions for executing said virtual prototype to generate cycle accurate information;

wherein said instructions for executing said virtual prototype to generate cycle accurate information further comprise:

instructions for dividing simulation activities in said simulation environment into a first plurality of activities comprising an execute phase and a second plurality of activities comprising an update phase;

instructions for computing said first plurality of activities comprising said execute phase at a clock edge;

instructions for updating at said clock edge a state of said simulation environment;  
and

instructions for computing said second plurality of activities comprising  
said update phase at said clock edge.

**Claim 39 (new):** A computer implemented method for simulating a system design  
containing at least two components, said method comprising:

identifying said components:

creating models of said components in a high level general purpose programming  
language;

creating a set of function calls in said high level general purpose programming language;

combining said models to form a virtual prototype;

linking one of said models with another of said models using said set of function calls;

executing said virtual prototype, wherein said models communicate through a transaction  
based interconnect and cycle accurate information is generated, wherein said transaction based  
interconnect includes said set of function calls;

wherein said generating cycle accurate information step further comprises:

dividing activities in said simulation environment into a first plurality of activities  
comprising an execute phase and a second plurality of activities comprising an update  
phase;

computing said first plurality of activities comprising said execute phase at a clock  
edge;

updating at said clock edge a state of said simulation environment; and

computing said second plurality of activities comprising said update phase at said clock edge.

**Claim 40 (new):** A computer implemented method for simulating a digital system design in a cycle based simulation environment, comprising:

creating a system design model in a high level general purpose programming language comprising at least two components;

creating a transaction based interconnect in said high level general purpose programming language that is available to said at least two components;

executing said system design model, wherein said at least two components communicate through said transaction based interconnect, wherein said transaction based interconnect includes a set of function calls; and

maintaining cycle accurate information during the simulation;

wherein said maintaining cycle accurate information step further comprises:

dividing simulation activities in said simulation environment into a first plurality of activities comprising an execute phase and a second plurality of activities comprising an update phase;

computing said first plurality of activities comprising said execute phase at a clock edge;

updating at said clock edge a state of said simulation environment; and

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computing said second plurality of activities comprising said update phase at said clock edge.

**Claim 41 (new):** A computer program product embodied on a computer-readable medium, which when executed, causes a processing system to simulate a system design within a cycle based simulation environment, said computer program product comprising:

instructions for identifying at least two components in said system design;

instructions for integrating models of said at least two components, wherein said models are created in a high level general purpose programming language;

instructions for linking said models using a set of function calls created in said high level general purpose programming language; and

instructions for executing said system design, wherein said models communicate through a transaction based interconnect using said set of function calls and cycle accurate information is generated, wherein said transaction based interconnect includes said set of function calls;

wherein said instructions for generating cycle accurate information further comprise:

instructions for dividing simulation activities in said simulation environment into a first plurality of activities comprising an execute phase and a second plurality of activities comprising an update phase;

instructions for computing said first plurality of activities comprising said execute phase at a clock edge;

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instructions for updating at said clock edge a state of said simulation environment;  
and  
instructions for computing said second plurality of activities comprising said update phase at said clock edge.

**Claim 42 (new):** A method for simulating a design containing at least two components, said method comprising:

creating a model representing each of said at least two components, wherein said models comprise a virtual prototype and communicate through a transaction based interconnect, wherein said transaction based interconnect includes at least one function call; and

executing said virtual prototype to generate cycle accurate information;

wherein said executing step is performed in a cycle based simulation environment and said generating cycle accurate information step further comprises:

dividing activities in said cycle based simulation environment into a first plurality of activities comprising an execute phase and a second plurality of activities comprising an update phase;

computing said first plurality of activities comprising said execute phase at a clock edge;

updating at said clock edge a state of said simulation environment; and

computing said second plurality of activities comprising said update phase at said clock edge.

**Claim 43 (new):** A computer program product embodied on a computer-readable medium, which when executed, causes a processing system to simulate a system design containing at least two components, said computer program product comprising:

instructions for integrating a model representing each of said at least two components, wherein said models comprise a virtual prototype and communicate through a transaction based interconnect, wherein said transaction based interconnect includes a set of function calls; and

instructions for executing said virtual prototype to generate cycle accurate information; wherein said instructions for executing said virtual prototype to generate cycle accurate information further comprise:

instructions for dividing simulation activities in said simulation environment into a first plurality of activities comprising an execute phase and a second plurality of activities comprising an update phase;

instructions for computing said first plurality of activities comprising said execute phase at a clock edge;

instructions for updating at said clock edge a state of said simulation environment; and

instructions for computing said second plurality of activities comprising said update phase at said clock edge.